DOCUMENT-IDENTIFIER: US 5147308 A
TITLE: Surgical needle and stylet with a guard

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BSPR:
The present invention relates to surgical methods of probing the body with
needles adapted to aspirate fluids or withdraw tissue and the like from desired
locations in the body, and to improved apparatus for carrying out the same;
being more particularly directed to **needle**-stylet structures in which the
stylet occludes the **needle** lumen down to the distal insertion end opening
during insertion into the body and is then removed to permit the attachment of,
for example, syringes and the like as for the purpose of effecting fluid or
tissue **aspiration** through the open **needle** lumen.

BSPR:
While the invention will illustratively first be described in connection with
such fluid **aspiration** and biopsy or other tissue withdrawal modes of operation,
it will be evident that the same **needle**-stylet apparatus is also used for the

introduction of fluids, air and other gases, drugs and other materials to
desired locations in the body, as for diagnostic or therapeutic intervention
and similar purposes, as well.

BSPR:
For such and related purposes, sterile needle-stylet units are commonly
injected or inserted into many parts of the body including vessels such as
arteries and veins; joint spaces as for therapy and diagnosis in knees, hips,
ankles, **spine,** discs, shoulders, etc.; the spinal canal; hollow and solid
organs; tumors; abscesses; pericardial (heart), pleural (lung) and perinephric
(kidney) spaces; amniotic fluid, umbilical cord and parts of the fetus in
connection with pregnant women; lymph channels; brain ventricles, and the
vitreous of the eye, to mention some of the more common.

BSPR:
Despite the wide-spread universal use of **needle aspiration,** drainage, biopsy,
space access, localization, ablation and injection, the problem underlying the
present invention residing in the danger of sticking the fingers of the
physician or nurse in the often frequent reinserting of the stylet into the

needle, as later more fully explained, has remained largely without solution;
and unfortunately currently leaves the profession dangerously exposed to the
ever-increasing threats of infection by AIDS, virus, hepatitis and other
innoculum that may be present on the stylet after its contact with the patient.

DEPR:
Referring to FIGS. 1 and 2, a shielding or guard surface 1, such as a rigid,
puncture-proof conical funnel as of plastic of the like provided with a sleeve
1' at its apex for receiving the needle shank or shaft 2, is shown preferably
slidably attached and longitudinally positionable along the needle between the
proximal end hub 2' and the pointed insertion distal end 2". The before-mentioned needle-lumen-occluding stylet is shown at 3, with its lower
tip 3' just slightly raised in FIG. 1 to open the distal insertion end 2" of
the needle which it otherwise blocks when fully inserted into the needle. Such
blocking or occluding is the prerequisite of inserting the **needle** into the body
to probe toward the desired location therein, with the stylet withdrawal then
being effected to permit **aspiration** or fluid application or other functions, as
before explained, through the open **needle**.

DEPR:
Whether the needle has indeed reached the desired location in the body may be
ascertained or monitored in various ways. Sometimes mere visual inspection
after removal of the stylet may aid; and sometimes the failure of fluid or
tissue withdrawal by the syringe attached to the needle hub will indicate error
in or improper location. Such, indeed, could be the situation in FIG. 4, where
the needle distal end 2" has penetrated the skin but not the uterus and has not
reached the amniotic fluid which it is desired to aspirate. In FIG. 6, the
needle has been re-occluded by the reinsertion of the stylet 3 while the needle
is still in situ in the body, and advanced into the amniotic fluid. Attachment
of the syringe S, FIG. 7, after removal of the stylet, with the shield 1 moved
to abut the skin and delimit further penetration of the **needle,** will enable
aspiration or suction of the desired fluid sample through the open **needle** bore
into the syringe for laboratory analysis.

CLPR:
1. Surgical **needle** probing and **aspiration** having, in combination, an outer
hollow **needle** provided with a bore extending from a proximal hub

end to a
distal insertion end, an inner removable stylet extending coaxially along the
bore from the hub end to the insertion end of the **needle,** and shielding guard
means intermediately apertured to receive the **needle**-stylet and provided with
means for positioning the same at a predetermined position along the **needle**
below the said proximal hub end of the **needle,** the guard means extending
laterally of the external circumferential surface of the **needle** and around the
needle sufficiently to protect the fingers of one hand holding the **needle**
between the guard means and the said distal intertion end of the **needle** from
contact with the stylet during its re-insertion by the other hand, following
removal, into the said hub end of the **needle,** and in which means is provided
for varying the said position of the guard means along the **needle** to control or
limit the depth of penetration of the **needle** into the body and in which said
guard means comprises means converging toward the **needle** and there-provided
with sleeve means slidable along the **needle** for adjusting the position of the
guard means therealong, and in which said guard means is conical.

CLPR:

2. Surgical **needle** probing and **aspiration** apparatus having, in combination, an
outer hollow **needle** provided with a bore extending from a proximal hub end to a
distal insertion end, an inner removable stylet extending coaxially along the
bore from the hub end to the insertion end of the **needle,** and shielding guard
means intermediately apertured to receive the **needle**-stylet and provided with
means for positioning the same at a predetermined position along the **needle**
below the said proximal hub end of the **needle,** the guard means extending
laterally of the external circumferential surface of the **needle** and around the
needle sufficiently to protect the fingers of one hand holding the **needle**
between the guard means and the said distal insertion end of the **needle** from
contact with the stylet during its re-insertion by the other hand, following
removal, into the said hub end of the **needle,** and in which means is provided
for varying the said position of the guard means along the **needle** to control or
limit the depth of penetration of the **needle** into the body and in which said
guard means comprises means converging toward the **needle** and the re-provided
with sleeve means slidable along the **needle** for adjusting the position of the

guard means therealong and in which said sleeve means comprises a sleeve
frictionally holding the same to the **needle**.